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(54) Title: NOISE ADAPTIVE SONAR SIGNAL PROCESSOR

(57) Abstract: A system and method of performing sonar range estimations in a noisy sonar environment. The system includes a sensor, a transmitter, a receiver, a plurality of band-pass filters, a cross correlator, and a data analyzer. The transmitter transmits a pulse through a transmission medium. The pulse travels through the transmission medium until it strikes an object, which returns an echo to the sensor. The sensor provides the echo to the receiver, which provides an indication of the echo to the band-pass filters. The respective band-pass filters provide filtered versions of the echo and pulse to the cross correlator, which performs multiple cross correlation operations on the filtered echo and pulse. The cross correlator provides output data to the data analyzer, which uses the data to estimate the SNR in the environment and to determine a pulse center frequency corresponding to the estimated SNR. By controlling the center frequency of pulses emitted by the transmitter based on information provided by the data analyzer, the system obtains sonar range estimations with increased accuracy.



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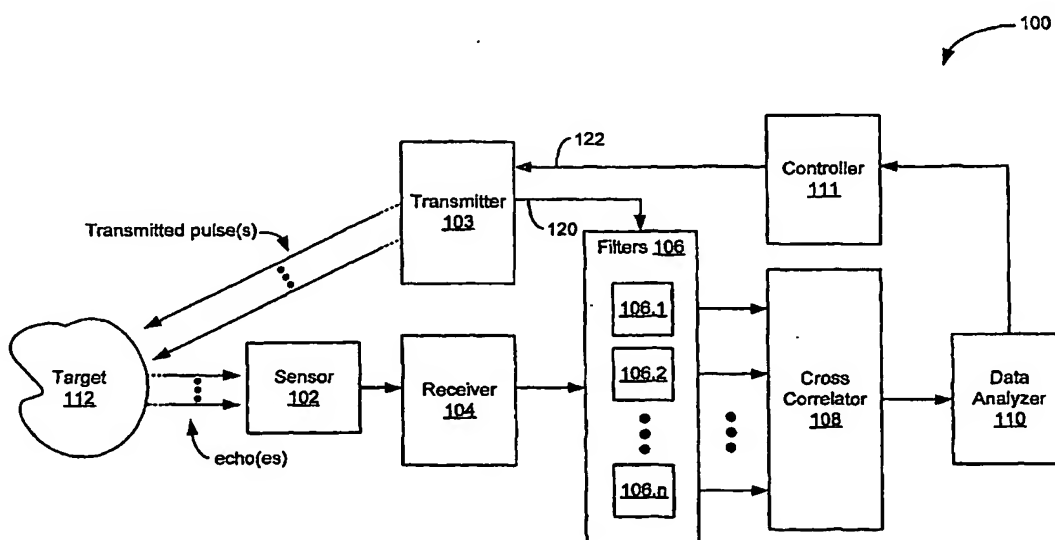
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[Continued on next page]

(54) Title: NOISE ADAPTIVE SONAR SIGNAL PROCESSOR



(57) Abstract: A sonar system (100) has a cross correlator (108) that processes both primary and secondary signals to detect cross correlation peak. The system includes a sensor (102), a transmitter (103), a receiver (104) a plurality of band-pass filters (106), a cross-correlator (108) and a data analyzer (110). The sonar system (100) estimates the range of a target (112) based on the detected cross correlation peak. A transmitter (103) changes the frequency of the primary signal based on the estimated or predetermined SNR (signal-to-noise ratio) in an environment.

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